

## CLAIMS

What is claimed is:

- 1           1.     A method of preparing a proteoliposome comprising the step of:  
2                     contacting a liposome with an effective portion of RLIP76 to create a  
3     proteoliposome.
- 1           2.     The method of claim 1, wherein the liposome is at least selected from the  
2     group consisting of lectin, glycolipid, phospholipid, and combinations thereof.
- 1           3.     The method of claim 1 further comprising adding the proteoliposome to  
2     one or more toxic compounds.
- 1           4.     The method of claim 3, wherein one or more toxic compounds reside in at  
2     least one of the group consisting of organism, mammalian cell, transfected mammalian  
3     cell, bioreactor, soil, water, spill, process waste stream, manufacturing waste chemical  
4     waste, laboratory waste, hospital waste, and combinations thereof.
- 1           5.     The method of claim 3, wherein adding the proteoliposome to one or more  
2     toxic compounds reduces the concentration of toxic compounds outside the  
3     proteoliposome.
- 1           6.     The method of claim 3, wherein adding the proteoliposome to one or more  
2     toxic compounds protects against further contamination by the one or more toxic  
3     compounds.
- 1           7.     The method of claim 3, wherein adding the proteoliposome to one or more  
2     toxic compounds prevents the accumulation of toxic compounds outside the  
3     proteoliposome. .
- 1           8.     The method of claim 3, wherein the toxic compound is selected from the  
2     group consisting of crude oil, crude oil fraction, an organic or inorganic chemical  
3     compound, radiation, waste products, a chemical solvent, metabolite, metabolic by-  
4     product, a chemical warfare agent, drug, drug by-product, chemical by-product, radiation,  
5     and combinations thereof.
- 1           9.     A proteoliposomal composition comprising:  
2                     a liposome; and

3 an effective portion of RLIP76.

1 10. The proteoliposome of claim 9, wherein the proteoliposome is used to  
2 reduce the concentration of toxic compounds on one side of the liposomal membrane.

1 11. The proteoliposomal composition of claim 9 further comprising at least  
2 one of the group consisting of 4-hydroxynonenal, leukotriene, polychlorinated biphenyls,  
3 glutathione, and combinations thereof.

1 12. The proteoliposomal composition of claim 9, wherein the effective  
2 portion of RLIP76 is dependent on ATP for optimal activity.

1 13. The proteoliposomal composition of claim 10, wherein the toxic  
2 compound is selected from the group consisting of crude oil, crude oil fraction, an organic  
3 or inorganic chemical compound, a chemical solvent, metabolite, metabolic by-product, a  
4 chemical warfare agent, drug, drug by-product, chemical by-product, radiation, stress by-  
5 product, and combinations thereof.

1 14. The proteoliposomal composition of claim 9, wherein the liposome is at  
2 least selected from the group consisting of lectin, glycolipid, phospholipid, and  
3 combinations thereof.

1 15. The proteoliposomal composition of claim 9, wherein the  
2 proteoliposomal composition is for the treatment of toxic compound exposure.

1 16. The proteoliposomal composition of claim 15, wherein treatment  
2 prevents accumulation of one or more toxic compounds outside the proteoliposome..

1 17. The proteoliposomal composition of claim 15, wherein treatment with the  
2 proteoliposomal composition reduces the concentration of toxic compounds outside the  
3 proteoliposome..

1 18. The proteoliposomal composition of claim 15, wherein treatment protects  
2 against further contamination by the one or more toxic compounds.

1 19. The proteoliposomal composition of claim 9, wherein the proteoliposomal  
2 composition is capable of being transfected into a bacterial or mammalian cell.

1 20. The proteoliposomal composition of claim 9, wherein the proteoliposomal  
2 composition is capable of having antibodies generated against it.

1           21.     The proteoliposomal composition of claim 9, wherein the effective portion  
2     of RLIP76 is capable of having antibodies generated against it.

1           22.     The proteoliposomal composition of claim 21, wherein antibodies raised  
2     against the effective portion of RLIP76 and added to the proteoliposomal composition  
3     prevent the activity of the effective portion of RLIP76.

1           23.     The proteoliposomal composition of claim 9, wherein the proteoliposomal  
2     composition is a nonselective transporter of neutral and charged compounds.

1           24.     The proteoliposomal composition of claim 9, wherein the proteoliposomal  
2     composition protects against drug and multidrug resistance.

1           25.     The proteoliposomal composition of claim 9, wherein the proteoliposomal  
2     composition modulates cellular signaling and affects cell proliferation.

1           26.     The proteoliposomal composition of claim 9, wherein the proteoliposomal  
2     composition modulates cellular signaling and affects cell death.

1           27.     The proteoliposomal composition of claim 9, wherein the effective portion  
2     of RLIP76 is an effective portion of recombinant RLIP76.

1           28.     The proteoliposomal composition of claim 9, wherein the proteoliposomal  
2     composition is administered to an organism in need thereof and protects the organism  
3     from stressors selected at least from the group consisting of heat, oxidant chemicals,  
4     chemotherapeutic agents, UV irradiation and X-irradiation, cell damage, waste by-  
5     products, and combinations thereof.

1           29.     The proteoliposomal composition of claim 28, wherein administration is  
2     selected at least from the group consisting of injection, dermal delivery, infusion,  
3     injection, and combinations thereof.

1           30.     A method of reducing the effects of ionizing radiation comprising the step  
2     of:

3                     adding a proteoliposome to a material with ionizing radiation, wherein the  
4     proteoliposome is a liposome and an effective portion of RLIP76.

1           31.     The method of claim 30, wherein the proteoliposome is added prior to the  
2     ionizing radiation.

1           32.     The method of claim 30, wherein ionizing radiation is at least selected  
2     from the group consisting of x-ray radiation, gamma radiation, ultraviolet radiation,  
3     thermal radiation, nuclear radiation, and combinations thereof.

1           33.     The method of claim 30, wherein the liposome is at least selected from the  
2     group consisting of lectin, glycolipid, phospholipid, and combinations thereof.

1           34.     The method of claim 30, wherein the material is at least selected from the  
2     group consisting of organism, mammalian cell, transfected mammalian cell, soil, water,  
3     spill, process waste stream, manufacturing waste, chemical waste, laboratory waste,  
4     hospital waste, and combinations thereof.

1           35.     The method of claim 30, wherein the effective portion of RLIP76 is  
2     dependent on ATP for optimal activity.

1           36.     A kit prepared for using the proteoliposomal composition of claim 21  
2     comprising:

3                     an effective dose of a proteoliposome, wherein the proteoliposome is a  
4     liposome and an effective portion of RLIP76; and

5                     an instructional pamphlet.

1           37.     The kit of claim 36, wherein the liposome is at least selected from the  
2     group consisting of lectin, glycolipid, phospholipid, and combinations thereof.

1           38.     The kit of claim 36, wherein the effective portion of RLIP76 is dependent  
2     on ATP for optimal activity.

1           39.     The kit of claim 36, wherein the kit is used to reduce the concentration of  
2     toxic compounds and their by-products and to enhance resistance to toxic compounds.

1           40.     The kit of claim 36 further comprising an antibody raised against the  
2     effective portion of RLIP76.

1           41.     The kit of claim 36 further comprising a means for administering the  
2     proteoliposomal composition.

1           42.     The kit of claim 36, wherein the means for administering the  
2     proteoliposomal composition is selected at least from the group consisting of injection  
3     device, dermal delivery device, infusion device, injection device, and combinations  
4     thereof.

1           43.     A method of enhancing the resistance of one or more cells to one or more  
2     toxic compounds comprising the step of:

3                     providing an effective dose of a proteoliposome to one or more cells,  
4     wherein the proteoliposome is a liposome and an effective portion of RLIP76.

1           44.     The method of claim 43, wherein the liposome is at least selected from the  
2     group consisting of lectin, glycolipid, phospholipid, and combinations thereof.

1           45.     The method of claim 43, wherein the effective portion of RLIP76 is  
2     dependent on ATP for optimal activity.

1           46.     The method of claim 43, wherein the proteoliposome protects one or more  
2     cells from stressors selected at least from the group consisting of heat, oxidant chemicals,  
3     chemotherapeutic agents, ionizing radiation, nuclear radiation, thermal radiation, cell  
4     damage, waste by-products, and combinations thereof.

1           47.     A method of preparing a proteoliposome comprising the step of:  
2                     contacting a liposome with an effective portion of RLIP76 to create a  
3     proteoliposome, wherein the liposome is at least selected from the group consisting of  
4     lectin, glycolipid, phospholipid, and combinations thereof, and wherein the effective  
5     portion of RLIP76 is dependent on ATP for optimal activity.

1           48.     A proteoliposomal composition comprising:  
2                     a liposome, wherein the liposome is at least selected from the group  
3     consisting of lectin, glycolipid, phospholipid, and combinations thereof; and  
4                     an effective portion of RLIP76, wherein the effective portion of RLIP76 is  
5     dependent on ATP for optimal activity.

1           49.     The proteoliposomal composition of claim 48, wherein the  
2     proteoliposomal composition is deliverable to any mammalian organ after administration.

1           50.     The proteoliposomal composition of claim 9 further comprising a gene.

1           51.     The proteoliposomal composition of claim 9, wherein the gene is delivered  
2     to a mammalian organ after administration of the proteoliposomal composition.

1           52.     The proteoliposomal composition of claim 9, wherein the proteoliposomal  
2     composition is a vehicle for the delivery to the brain of at least of the group consisting of  
3     a drug, protein, gene, antisense therapy, and combinations thereof.